AMENDMENTS TO THE CLAIMS

Claims 1-24 (Canceled)

25. (Currently Amended) A fuel cell having a proton exchange membrane, said membrane comprising a polyimidazole polymer of the type:

$$R_1$$
 R_2 R_3 R_3 R_4 R_5 R_4 R_5 R_5 R_5 R_5 R_7 R_7 R_8 R_8 R_9 R_9

wherein <u>n</u> is a positive integer, R_1 – R_3 are independently H, a halogen, alkyl, or a substituted alkyl; and wherein X_1 and X_2 are independently H or an electron withdrawing group; said membrane including a silicon compound therein.

- 26. (Original) The fuel cell of claim 25, wherein X_1 and X_2 are each CN.
- 27. (Original) The fuel cell of claim 25, wherein said membrane further includes a polar solvent dissolved therein.
- 28. (Original) The fuel cell of claim 25, wherein said membrane further includes a dopant therein.

- 29. (Original) The fuel cell of claim 25, wherein said dopant comprises a strong acid.
- 30. (Original) The fuel cell of claim 29, wherein said strong acid is selected from the group consisting of nitric acid, phosphoric acid, polyphosphoric acid, sulfuric acid, and combinations thereof.
- 31. (Original) The fuel cell of claim 25, wherein said membrane comprises a copolymer of said polyimidazole polymer and another material.
- 32. (Previously Presented) The fuel cell claim 25, wherein R_1 – R_3 are independently H or a C_1 - C_5 alkyl.
- 33. (Previously Presented) The fuel cell of claim 25, wherein X_1 and X_2 are independently: NR_3^+ , SR_2^+ , NO_2 , SO_2R , CN, SO_2Ar , COOR, NRCOR, OR, SR, $C \equiv CR$, Ar, $CR = CR_2$; wherein R is: H, alkyl, or substituted alkyl, and wherein Ar is an aromatic group.
- 34. (Previously Presented) The fuel cell of claim 27, wherein said polar solvent is selected from the group consisting of N-methylpyrrolidone, dimethylformamide, dimethylsulfoxide, and combinations thereof.
- 35. (Previously Presented) The fuel cell of claim 29, wherein said strong acid is an organic acid.

- 36. (Previously Presented) The fuel cell of claim 25, wherein the polymer comprising said membrane has a molecular weight in the range of 5×10^3 - 10^7 daltons.
- 37. (Previously Presented) The fuel cell of claim 25, wherein said membrane has a thickness in the range of 25-200 microns.
- 38. (Previously Presented) The fuel cell of claim 25, wherein said membrane has an electrical conductivity greater than 0.01 S/cm.
- 39. (Previously Presented) The fuel cell of claim 25, wherein said membrane comprises a polyimidazole polymer which is copolymerized with an acidic monomer.
- 40. (Previously Presented) The fuel cell of claim 39, wherein said acidic monomer is an acidic vinyl monomer.
- 41. (Previously Presented) The fuel cell of claim 40, wherein said acidic vinyl monomer is selected from the group consisting of: vinyl phosphonic acid, vinyl sulfonic acid, styrene sulfonic acid, and combinations thereof.
 - 42. (Previously Presented) The fuel cell of claim 25, wherein R₁-R₃ are fluorine.
- 43. (Previously Presented) The fuel cell of claim 25, wherein said membrane includes a heteropolyacid.

- 44. (Previously Presented) The fuel cell of claim 43, wherein said heteropolyacid is selected from the group consisting of: monododecylphosphate, phosphotungstic acid, silicotungstic acid, phosphomolybdic acid, and combinations thereof.
- 45. (Previously Presented) The fuel cell of claim 43, wherein said heteropolyacid is adsorbed on a carrier which is dispersed in said polymer.
- 46. (Previously Presented) The fuel cell of claim 45, wherein said carrier comprises silica.

47. (Canceled)

- 48. (Currently Amended) The fuel cell of claim [[47]] <u>25</u>, wherein said silicon compound comprises SiO₂.
- 49. (Currently Amended) The fuel cell of claim [[47]] 25, wherein said silicon compound comprises a network of -Si-O-Si- which extends through at least a portion of said membrane.
- 50. (New) A fuel cell having a proton exchange membrane, said membrane comprising a polyimidazole polymer of the type:

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$$R_1$$
 R_2
 R_3
 R_3
 R_4
 R_4
 R_4
 R_4
 R_5
 R_4
 R_4
 R_4
 R_4
 R_5
 R_4
 R_5
 R_5
 R_7
 R_7
 R_7
 R_7
 R_8

wherein n is an integer, R_1 – R_3 are fluorine; and wherein X_1 and X_2 are independently H or an electron withdrawing group.

51. (New) A fuel cell having a proton exchange membrane, said membrane comprising a polyimidazole polymer of the type:

$$R_1$$
 R_2
 R_3
 R_3
 R_4
 R_4
 R_4
 R_4
 R_5
 R_4
 R_4
 R_5
 R_4
 R_5
 R_4
 R_5
 R_5
 R_7
 R_7
 R_7
 R_7
 R_8

wherein n is an integer, R_1 – R_3 are independently H, a halogen, alkyl, or a substituted alkyl; and wherein X_1 and X_2 are independently H or an electron withdrawing group; said membrane including a heteropolyacid.

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52. (New) The fuel cell of claim 51, wherein said heteropolyacid is selected from the group consisting of: monododecylphosphate, phosphotungstic acid, silicotungstic acid, phosphomolybdic acid, and combinations thereof.